

I CLAIM:

1. A restorative dental method for treating a partially or fully edentulous patient, comprising the following steps:

5 providing one or more permanent implants extending through the crestal bone of a patient's mouth at one or more permanent implant sites for supporting one or more final dental restorations; and

providing one or more provisional implants extending through the crestal bone in the patient's mouth adjacent the permanent implant sites for supporting one or more provisional dental restorations

10 whereby one or more provisional dental restorations may be supported by the provisional implants during an initial healing period while substantially avoiding forces being exerted on said permanent implants.

2. The method of Claim 1, further comprising:

15 bearing a temporary prosthesis upon at least one of the provisional implants;

allowing the permanent implants to osseointegrate;

removing the temporary prosthesis; and

bearing a permanent prosthesis upon at least one of the permanent implants.

20 3. The method of Claim 2, further comprising removing the provisional implants prior to bearing the permanent prosthesis.

4. The method of Claim 2, wherein bearing the provisional implant comprises receiving forces acting on the provisional prosthesis while the permanent implant osseointegrates.

25 5. The method of Claim 2, further comprising, after providing the provisional implant and prior bearing the temporary prosthesis, temporarily attaching an extender to the provisional implant in order to better display its orientation.

6. The method of Claim 1, further comprising removing the provisional provisional implant after a period during which the permanent implant osseointegrates.

30 7. The method of Claim 1, wherein the provisional implant is threaded and providing the provisional implant comprises:

drilling an osteotomy adjacent the permanent implant site; and

twisting the provisional implant into the osteotomy.

8. The method of Claim 7, wherein twisting comprises engaging with a torque providing tool a portion of the provisional implant between a threaded segment and an opposite end.

5 9. The method of Claim 7, further comprising bending a segment of the provisional implant adjacent the threaded segment.

10. The method of Claim 9, wherein bending is performed after the provisional implant has been placed in the osteotomy.

11. The method of Claim 1, wherein providing the provisional implant is performed after providing the permanent implant.

12. The method of Claim 1, wherein the provisional implant has a maximum width of less than about 3.5 mm.

13. The method of Claim 12, wherein the provisional implant is provided at a provisional implant site at least about 3 mm from the permanent implant site.

15 14. The method of Claim 1, wherein said provisional prosthesis is attached to the immediate provisional implants using a temporary adhesive.

15. The method of Claim 1, further comprising creating a temporary dental prosthesis for engagement with the provisional implant.

20 16. The method of Claim 15, wherein creating the temporary dental prosthesis comprises adapting an existing denture to be attached to engage the provisional implant.

25 17. The method of Claim 15, wherein said creating comprises the steps of approximately shaping an autopolymerizing, tooth-colored acrylic within the patient's mouth after providing the provisional implant and further refining this acrylic before temporarily attaching the prosthesis to the provisional implant.

18. The method of Claim 15, further comprising closing a patient's gum over the permanent implant prior to temporarily attaching the prosthesis to the provisional implant.

30 19. The method of Claim 15, wherein said creating comprises taking an in-mouth impression with a resilient impression material after the immediate provisional implants are inserted; and

shaping the provisional dental prosthesis outside of the patient's mouth, based on information obtained from the in-mouth impression.

20. A method for providing a fixed, temporary dental prosthesis during a healing period for allowing osseointegration of two or more permanent implants implanted into the jaw bone of a patient, comprising:

implanting one or more provisional implants in the jaw bone at positions generally between the permanent implants, each of the provisional implants including abutments protruding out of the bone; and

adhering a temporary dental prosthesis to the abutments such that it is supported by the provisional implants during the healing period while substantially preventing mastication forces from being exerted on said permanent implants.

21. The method of Claim 20, further comprising removing the provisional implants after the healing period.

22. The method of Claim 20, wherein each provisional implant has an implanted segment having a maximum width transverse to an implant axis less than a maximum width transverse to an implant axis of the permanent implants.

23. The method of Claim 22, wherein maximum width of the provisional implants is no more than about half the maximum width of the permanent implants.

24. The method of Claim 20, wherein each provisional implant is centered about a site no less than about 3 mm from a permanent implant site.

25. The method of Claim 20, further comprising installing a permanent dental prosthesis upon the permanent implants after removing the temporary dental prosthesis.

26. A system for providing an interim dental prosthesis while allowing healing and osseointegration of two or more permanent implants anchored within a patient's mouth comprising:

one or more provisional implants for anchoring generally adjacent the permanent implants, each said provisional implant comprising a threaded body segment having a maximum width of no more than about 3.5 mm, a neck segment integrally formed with and extending from the body segment, the neck

segment including a torque accepting feature, and an abutment integrally formed with and extending from the neck segment for receiving a dental restoration; and

5 a temporary dental restoration configured to be supported upon the provisional implants such that it is supported by the provisional implants during the healing period while substantially preventing mastication forces from being exerted on said permanent implants.

27. The system of Claim 26, wherein the provisional implants each include a threaded segment for engagement with cortical bone.

10 28. The system of Claim 27, wherein the threaded segments of each provisional implants is non-conically tapered.

29. The system of Claim 27, wherein the threaded segment of each provisional implants are longer than threaded portions of each permanent implants.

15 30. The system of Claim 27, wherein the provisional implants each further comprise an abutment extending integrally from the threaded segment at least about 3.0 mm.

31. The system of Claim 30, wherein the abutment extends integrally from the threaded segment at least about 6.0 mm.

32. A system for providing an immediate provisional dental implant, comprising:

20 a plurality of provisional dental implants, each including a threaded body segment having a maximum width of no more than about 3.5 mm, a neck segment integrally formed with and extending from the body segment, the neck segment including a torque accepting feature, and an abutment integrally formed with and extending from the neck segment;

25 an osteotomy drill having a diameter less than the maximum width of the threaded body; and

30 a torque-supplying driver tool adapted to engage with the torque-accepting feature of each provisional dental implant and impart rotation for self-screwing the provisional implant into an osteotomy drilled by the osteotomy drill.

33. The system of Claim 32, wherein the torque-supplying driver tool comprises an insertion wrench adapted to fit over the abutment and engage with the torque-accepting feature of each provisional dental implant.

34. The system of Claim 32, wherein the torque-accepting feature comprises a plurality of facets extending circumferentially around the neck segment.

35. The system of Claim 32, further comprising a plurality of extenders, each adapted to be temporarily mounted upon and parallel to the abutment of one of the provisional implant.

36. The system of Claim 32, further comprising a torque-supplying retrieval tool adapted to remove each provisional implant from bone.

37. The system of Claim 32, further comprising a bending tool configured to engage with the abutment of each provisional implant, the neck being sufficiently pliable to bend upon application of bending forces when the threaded body segment is anchored in bone.

38. The dental implant system of Claim 32, further comprising a plurality of copings each configured to mate with and temporarily adhere to the abutment of one of the provisional implants.

39. An integrally-formed immediate provisional dental implant elongated along an implant axis, comprising:

an abutment adapted to bond with a dental prosthesis;

a flexible neck segment connected to the abutment.

a body segment connected to the neck segment, the body segment having threads extending helically about the implant axis, the thread diameter tapering non-linearly from a maximum adjacent the neck segment to a minimum at a distal end.

40. The immediate provisional dental implant of Claim 39, wherein the threaded body segment comprises an upper flared section proximal to the neck portion, an intermediate section and a tapered lower section distal from the neck portion, the lower section having a smaller angle of taper as compared to the upper section.

41. The immediate provisional dental implant of Claim 40, wherein threads of the upper flared section define a taper angle between about 6° and 14°.

42. The immediate provisional dental implant of Claim 40, wherein thread of the tapered lower section define a taper angle between about 3° and 7°.

43. The immediate provisional dental implant of Claim 40, wherein the neck segment is more narrow than both of the upper flared section of the body segment and the abutment.

44. The immediate provisional dental implant of Claim 40, wherein threads of the intermediate section have a constant diameter.

45. The immediate provisional dental implant of Claim 39, wherein the thread diameter is within the range of about 1.0 mm and 3.5 mm.

46. The immediate provisional dental implant of Claim 45, wherein the thread diameter is less than about 3.0 mm.

47. The immediate provisional dental implant of Claim 39, wherein the body segment is at least about 12 mm in length.

48. The immediate provisional dental implant of Claim 39, wherein the body segment is approximately equal to the thickness of the cortical layer of the bone in which the implant is to be emplaced.

49. The immediate provisional dental implant of Claim 39, wherein the neck segment and abutment form an extension from the body segment with a length of greater than about 3 mm.

50. The immediate provisional dental implant of Claim 49, wherein the neck segment and abutment form an extension from the body segment with a length of greater than about 5 mm.

51. The immediate provisional dental implant of Claim 39, having a total length along the implant axis of greater than 17 mm.

52. The immediate provisional dental implant of Claim 51, having a total length along the implant axis of greater than 20 mm.

53. The immediate provisional dental implant of Claim 39, having a thread depth tapering from a maximum thread depth adjacent the neck segment to a minimum thread depth adjacent the distal end.

54. The immediate provisional dental implant of Claim 53, wherein the maximum thread depth is between about 0.5 mm and 0.7 mm.

55. The immediate provisional dental implant of Claim 53, wherein a thread pitch of the body segment is in the range 0.8 mm to 1.8 mm.

56. The immediate provisional dental implant of Claim 39, comprising a plurality of flat facets on the outer surface of the neck segment.

5 57. The immediate provisional dental implant of Claim 39, consisting a material selected from the group consisting of titanium and alloys of titanium.

58. A dental implant system for treating a fully or partially edentulous patient, comprising

10 a plurality of permanent implants sized and adapted to be anchored within cortical bone in the patient's mouth; and

a plurality of provisional implants sized and adapted to be anchored within the cortical bone at positions generally adjacent or between the permanent implants, each of the provisional implants being narrower than each of the permanent implants, whereby the provisional implants are adapted to receive and support a temporary dental prosthesis during the healing period for the permanent implants while substantially preventing mastication forces from being exerted on the permanent implants.

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59. The dental implant system of Claim 58, wherein each of the provisional implants is configured to extend deeper into the cortical bone than adjacent permanent implants.

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60. The dental implant system of Claim 58, further comprising a temporary prosthesis adapted to be adhered to and supported upon the provisional implants.

61. The dental implant system of Claim 60, wherein the temporary prosthesis is adapted to be adhered to an integral abutment extending from a threaded segment of each provisional implant being submerged in the cortical bone.

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